**Background**

A generalist investment team has added coverage of publicly traded quick serve restaurants. The investment team has approached you to give them colour on the quick serve sub-sector from 1 July 2012 to 31 December 2014.

**Task 1: Data Analysis and Evaluation**

Familiarize yourself with the available materials:

* Mock US credit card data for quick serve restaurants
* Mock US consumer quick serve restaurant survey results
* Mock URL tracking data for quick serve restaurants

We are interested in how the 3 burger chains (McDonalds/Burger King/Wendy’s) and 3 pizza chains (Pizza Hut/Domino’s Pizza/Papa Johns) are doing as of 2014 Q4.

1. Using the credit card data, for each merchant:
2. Aggregate the sales by month
3. Compute a monthly sales figure adjusting for the panel size
4. Compare the monthly YoY data

**Deliverables: Visual/tabular outputs, commentary, Python source code/Excel workbook used**

Pull together the credit card, survey, and URL tracking data.

1. Can you formulate a thesis based on the data sets you have seen?
2. What trends can you determine based on the data?
3. What conclusions can you draw?
4. What correlations can you draw between the data sets?
5. If you could ask another survey question, what would you ask?
6. If you could include another metric (Reach, Total Visits, etc.) in the URL track data, what would you track?
7. What do you think are the pros/cons of the three data sets?
8. If you could add an additional data source what would you request?

**Deliverables: Commentary supported by visual outputs where appropriate, Python source code/Excel workbook used**

**Task 2: Integrating Alternative Data**

An analyst from the investment team wants to incorporate the credit card data into their research process for McDonald’s.

1. Write a brief commentary discussing whether you expect the transaction data from Task 1 to be better suited for predicting McDonald’s financial performance or its share price
2. Based on your response to the previous question, select a single target variable (either price-based or KPI-based) to model. Use Python and a modelling approach of your choice to investigate the suitability of transaction data for predicting your chosen target variable.
   1. The file *7. Modelling\_test\_data.xlsx* contains a daily share price history and a set of financial KPIs
   2. If time allows, you are welcome to model additional target variables
3. Present the results of your analysis. This can be done using any visualisation package of your choice
4. Write a short recommendation for the analyst based on your findings, indicating how the transaction data can be incorporated and its suitability for the chosen purpose.

**Deliverables: Commentary, Python source code, visual outputs from model and recommendation**

**Task 3: SQL**

Consider a situation where the transaction data is in a SQL database in two tables, where the tables are named after the sheets in the credit card data file.

Write the SQL queries that would perform each of the three operations listed in question 1 of Task 1.

Write a query that would generate a weekly view of the credit card data in the daily table.

You may use Microsoft SQL Server or Snowflake syntax instead of ANSI (standard) SQL syntax if you wish.

**Deliverables: SQL code**